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Before the  
Federal Communications Commission  
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of )

Amendment of Section 2.106 of the )  
Commission's Rules to Allocate )  
Spectrum for 2 GHz for Use )  
by the Mobile Satellite Service )

To: The Commission )

ET Docket No. 95-18

**JOINT COMMENTS OF  
THE ASSOCIATION FOR MAXIMUM SERVICE TELEVISION, INC. AND  
THE NATIONAL ASSOCIATION OF BROADCASTERS**

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## SUMMARY

In this proceeding to allocate spectrum for mobile-satellite services (“MSS”), the Commission proposes to shrink even further the spectrum allocated to broadcast auxiliary services (“BAS”) to accommodate MSS. The Commission also reiterates its conclusion that the relocation compensation principle developed in the *Emerging Technologies* proceeding should govern the relocation of BAS incumbents by MSS and seeks comment on how the relocation compensation principle should be implemented here.

It is clear that the *Emerging Technologies* compensation principle – which provides that those seeking access to occupied spectrum for the provision of new technologies may obtain access to that spectrum only if they pay all costs necessary to relocate the incumbent licensees to comparable facilities in alternative spectrum – is controlling in this proceeding and provides the only fair means through which the spectrum currently used by BAS can be transferred to MSS. The precedent established in the *Emerging Technologies* proceeding is clearly applicable here because, as in the earlier proceedings, those who would provide a service employing new technologies seek access to spectrum that is already occupied by licensees that have long employed the spectrum to provide services – here, valuable news and special events programming – that promote the public interest. As in the *Emerging Technologies* proceeding, it would not be fair to require the incumbent users, who have already made their own investments to harness the value of the spectrum and who will derive no economic benefit from the new service, to bear the relocation costs. The rationale for the precedent remains sound, and there is nothing that would justify compromising the principle in this proceeding.

There are, however, differences in the BAS relocation that justify modifying somewhat the mechanism through which the basic compensation principle is implemented. The new and incumbent services are quite different from those involved in the earlier proceedings because MSS operates globally and BAS licensees jointly occupy their spectrum through a system of flexible and coordinated sharing. These differences require that all BAS incumbents be relocated simultaneously by the time the first MSS operator launches service. In addition, the global nature of the MSS service and the extent to which BAS will interfere with MSS make it critical that the BAS relocation succeed, since a return to the old allocation will not be feasible once MSS service has begun. There are also important differences in the circumstances surrounding the BAS relocation. Here, international agreements call for a rapid clearing of the MSS spectrum at a time when equipment for the new BAS allocation has not yet been developed and many MSS operators are apparently hesitant to undertake to provide relocation compensation.

Accordingly, the mechanism through which the compensation principle is implemented should be modified to assure that compensation negotiations proceed expeditiously and, if unsuccessful, are followed by mandatory relocation of BAS incumbents upon the prompt payment by MSS applicants of the actual and reasonable costs of relocation to comparable facilities. Specifically, the relocation compensation scheme adopted in this proceeding should provide for (1) collective negotiation between all MSS applicants and an entity representing broadcast BAS incumbents; (2) a single, mandatory two-year negotiation period; (3) strict enforcement of the obligation to negotiate in good faith; (4) modification of the sunset feature; and (5) compensation for comparable facilities that satisfy technical criteria relevant to BAS.

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THE NATIONAL ASSOCIATION OF BROADCASTERS**

The Association for Maximum Service Television, Inc. ("MSTV") and the National Association of Broadcasters ("NAB")<sup>1</sup> (collectively, "Joint Broadcasters") file these comments to urge the Commission to establish a comprehensive relocation plan that will enable all incumbent BAS licensees quickly and efficiently to vacate the spectrum allocated for mobile-satellite services ("MSS") without materially disrupting the invaluable news and special events coverage the BAS incumbents provide. As the Commission recently reaffirmed, the relocation plan should be based on the principle that incumbent spectrum occupants are entitled to compensation for the costs of relocating to make spectrum available for new services.<sup>2</sup> However, the relocation plan adopted to implement

<sup>1</sup> MSTV is a non-profit trade association of local broadcast television stations committed to achieving and maintaining the highest technical quality for the local broadcast system. NAB is a non-profit, incorporated association of radio and television stations and networks that serves and represents the American broadcast industry.

<sup>2</sup> The Commission has repeatedly endorsed the application of the relocation compensation principle in this proceeding, though ICO Services Limited ("ICO") simply refuses to accept  
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that principle should be modified to reflect the differences between the type of relocation involved in the PCS-related proceedings and that contemplated here.

**I. BAS LICENSEES ARE WILLING TO ADAPT THEIR OPERATIONS TO THE COMMISSION'S PROPOSED SPECTRUM ALLOCATION FOR BAS, PROVIDED THAT THEY ARE COMPENSATED FOR THE COSTS OF RELOCATING TO THE NEW SPECTRUM.**

In this and other proceedings, the Joint Broadcasters and others have repeatedly informed the Commission that broadcasters' use of BAS spectrum for valuable electronic newsgathering ("ENG") services is extensive and growing, creating significant overcrowding in the limited spectrum currently available.<sup>3</sup> Further, broadcasters have explained that the transition to digital and high definition television will trigger the need for additional ENG services, making existing spectrum allocations for this service even more congested and inadequate.<sup>4</sup>

Despite these undisputed facts, Congress in the *1997 Budget Act* essentially required the Commission to reallocate for auction a portion of the 2 GHz spectrum currently

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that fact, as demonstrated by its recent filing of yet another petition challenging the application of the principle to MSS operators. Petition for Further Limited Reconsideration of ICO Services Limited, ET Docket No. 95-18 (Jan. 19, 1999).

<sup>3</sup> See, e.g., Joint Comments of the Association for Maximum Service Television, Inc. and Other Major Television Broadcasting Entities, ET Docket No. 95-18, at 7-9 (May 17, 1996) ("*Joint Comments II*"); Joint Comments of the Association of Maximum Service Television, Inc. and Other Major Television Broadcasting Entities, ET Docket No. 95-18, at 10-15 (May 5, 1995) ("*Joint Comments I*"); see also Joint Comments of the Association for Maximum Service Television, Inc. and Other Major Television Broadcasting Entities, IC Docket No. 94-31, at 5-12 (March 6, 1995); Joint Comments of the Association for Maximum Service Television, Inc. and Other Major Television Broadcasting Entities, ET Docket No. 94-32, at 2-5 (Dec. 19, 1994).

<sup>4</sup> See, e.g., *Joint Comments II*, at 8-9; Joint Comments of the Association for Maximum Service Television, Inc. and Other Major Television Broadcasting Entities, ET Docket No. 94-32, at 3-9 (March 21, 1995).

used for BAS,<sup>5</sup> and the Commission accordingly has proposed to shrink the BAS allocation to 85 MHz at 2025-2110 MHz.<sup>6</sup> The Joint Broadcasters recognize that the Commission is bound by Congress's direction, and they believe that, with a good deal of effort and substantial lead time, ENG operations in the proposed allocation can be made feasible through equipment modification or replacement. Accordingly, BAS licensees are willing to accept the proposed 85 MHz allocation and to adapt their operations as necessary, provided that they are compensated by the MSS entrants for the actual and reasonable costs of relocating to the dramatically reduced allocation.<sup>7</sup>

The Joint Broadcasters stress, however, that relocation to the proposed 85 MHz allocation will be feasible only if compensation is sufficient (1) to enable all BAS licensees to vacate completely the 35 MHz of spectrum that has been reallocated for MSS and (2) to relocate BAS incumbents to facilities that are equivalent to or better than current facilities.

The Commission determined earlier in this proceeding that the entire 1990-2025 MHz spectrum band should be available for the MSS service. The Commission also concluded that sharing between the MSS and BAS services is not technically feasible.<sup>8</sup> Both

<sup>5</sup> Balanced Budget Act of 1997, Pub. L. No. 105-33, § 3002(c)(3), 111 Stat. 251, 261 ("1997 Budget Act").

<sup>6</sup> Memorandum Opinion and Order and Third Notice of Proposed Rulemaking and Order, *In re Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service*, ET Docket No. 95-18, FCC 98-309, ¶¶ 30-32 (released Nov. 27, 1998) ("MO&O/Third NPRM").

<sup>7</sup> As discussed in Section III, although BAS licensees are willing to adapt their operations to the proposed allocation, they object to one of the limitations placed on their use of the spectrum to accommodate the elevation of Government space research, space operations, and Earth-exploration satellite services to "co-primary" status.

<sup>8</sup> First Report and Order and Further Notice of Proposed Rulemaking, *In re Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the*  
(continued...)

MSS and BAS commenters agreed that sharing was not possible, and there have been no changes in the technical characteristics of either the MSS or BAS services that would justify altering that conclusion. Therefore, all BAS incumbents need to be cleared from the 1990-2025 MHz band before it can be used by MSS. Moreover, as is discussed more fully in Section II-A below, it is not possible to relocate BAS licensees on a piecemeal basis, either within a particular market or nationwide. Therefore, the Commission must adopt a relocation plan that will enable all BAS licensees to vacate the entire 1990-2025 MHz spectrum band and to commence operations in the 2025-2100 MHz band promptly.

In establishing the relocation plan, the Commission should make clear that the relocation facilities for which compensation is provided, whether analog or digital, must be “comparable” to the old facilities. The Commission explained in the *Emerging Technologies* and *Microwave Cost-Sharing* proceedings that replacement facilities must be “equal to or superior to existing facilities to be considered comparable.”<sup>9</sup> The Commission also set forth factors that it would consider in determining whether replacement facilities satisfied the “comparability” standard.<sup>10</sup> It should take the same approach here. The facilities to which BAS incumbents are required to relocate should be considered “comparable” only if they are at least equivalent to the existing facilities, *i.e.*, only if they

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*Mobile-Satellite Service*, ET Docket No. 95-18, 12 FCC Rcd 7388, 7401 (1997) (“*First Report & Order/FNPRM*”) (“As we indicated in the *Notice*, and the commenting parties agree, BAS and MSS cannot share the spectrum without unacceptable mutual interference.”).

<sup>9</sup> First Report and Order and Further Notice of Proposed Rulemaking, *In re Amendment to the Commission’s Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, WT Docket No. 95-157, 11 FCC Rcd 8825, 8838 (1996).

<sup>10</sup> *Id.* at 8840-44 (“comparable” facilities must be equivalent to incumbent facilities with respect to (i) communications throughput, (ii) system reliability, and (iii) operating costs).

enable broadcasters to continue to perform the same functions and deliver the same necessary services, of the same quality, that they do with existing facilities. The factors for determining whether replacement facilities are equivalent include: (i) video and audio performance; (ii) transmission robustness and reliability; and (iii) equipment functionality and features. The element of equipment functionality and features includes whether the modified or replacement equipment is suitable for its intended application. Because 2 GHz BAS paths are rarely ever pre-engineered, the equipment applications are varied and can range from ENG vans to helicopters to point-of-view (POV) applications such as “race car cams.” Thus, for example, if replacement equipment requires BAS licensees to sacrifice video quality and robustness in order to meet the weight requirements of a POV installation, the replacement facility should not be considered comparable.

**II. THE COMMISSION SHOULD MODIFY THE RELOCATION PLAN DEVELOPED IN THE *EMERGING TECHNOLOGIES* PROCEEDING TO FACILITATE THE FAIR, EFFICIENT AND EXPEDITIOUS RELOCATION OF ALL BAS INCUMBENTS.**

In the *MO&O/Third NPRM*, the Commission affirms its decision to apply the relocation compensation principle developed in the *Emerging Technologies* proceeding and seeks comment on the details of how the principle should apply to the BAS relocation.<sup>11</sup>

The Joint Broadcasters agree with the Commission’s decision and strongly support the application of the general relocation compensation principle to the BAS relocation. In applying that principle, however, the Commission should recognize the technical and circumstantial differences between the services involved and the relocation contemplated

<sup>11</sup> *MO&O/Third NPRM*, ¶¶ 13-19, 37-46.

here and in the PCS-related proceedings and should modify accordingly the scheme through which the compensation principle is implemented.<sup>12</sup>

**A. Important Differences Between Prior Relocation Experiences And The BAS Relocation Require Modification Of The Relocation Compensation Scheme.**

**1. The MSS And BAS Services Differ From The PCS And Microwave Services In Both Scope And Substance.**

When the Commission developed and refined the *Emerging Technologies* principle and implementation scheme, the new entrants it was accommodating were PCS providers and the incumbents to be relocated consisted of microwave fixed services. The PCS service was to be provided on a market-by-market basis, with separate PCS licensees in each market establishing their own pace and scope. The microwave incumbents to be relocated were each licensed to use a specific portion of the spectrum along specified and fixed paths. Therefore, PCS providers could identify the spectrum they wanted to use and negotiate directly with the incumbent occupants for relocation. They could also engineer around specific microwave paths if they could not reach agreement with particular incumbents. Thus, in a given geographic area PCS providers could relocate some microwave incumbents and leave others in place without adversely affecting their own service or that of either the incumbents who moved or those who stayed.

The characteristics of the services at issue in this proceeding are quite different. The MSS service is a global satellite service, not a local terrestrial service like PCS. The service cannot be deployed on a local basis, and operation of virtually any (high-

<sup>12</sup> The Joint Broadcasters take no position on how the relocation of FS services should be conducted. We note only the heightened importance of establishing a relocation plan for BAS licensees that will enable them to relocate quickly and efficiently without materially disrupting ENG services.

power) BAS equipment nationwide could interfere with the operation of a (low-power) MSS satellite. Therefore, it will not be possible for MSS providers to relocate BAS incumbents on a licensee-by-licensee or market-by-market basis. Before an MSS system is launched, all BAS incumbents will need to be out of the spectrum.

The BAS service differs from the fixed microwave services with respect to both the type of service it provides and the manner in which it occupies its spectrum. As the Joint Broadcasters and other commenters have already explained, ENG services provided by BAS licensees are “vital to the health of the broadcasting industry and to the information needs of the American public.”<sup>13</sup> The Commission’s efforts to accommodate BAS demonstrate its agreement that these services are of great value to the public. Accordingly, it is critically important that BAS incumbents be relocated without significant disruption to vital ENG operations in order to protect the public’s continued access to the timely and high-quality (not to mention free, universal, and locally-based) news and special events coverage that these services make possible.

Moreover, as a practical matter the BAS incumbents in each market generally occupy the entire block of allocated spectrum through a coordinated and flexible system of spectrum sharing. BAS licensees are licensed to use the entire range of spectrum allocated for BAS, and on a daily basis the frequency coordinators in each market assess the ENG needs in the market and determine how the available spectrum will be shared among the

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<sup>13</sup> *First Report & Order/FNPRM*, 12 FCC Rcd at 7396 (describing comments of MSTV and other major television broadcasting entities); *see also, e.g., Joint Comments I*, at 6 (“[BAS] operations are essential to the provision of free, locally based, universal television programming that provides virtually all Americans with their primary source of news, sports, and information.”).

licensees.<sup>14</sup> The entire pool of allocated spectrum is shared by the various licensees in the market, and no single licensee uses only one specific portion of the spectrum. Because the licensees share – and generally fully occupy – the seven channels in a market, they must all operate under the same channel plan. It is not possible for some licensees to operate in the current 120 MHz channel plan and others in the new 85 MHz plan because channels would overlap and interfere with each other. Therefore, all the BAS incumbents in a market must move simultaneously to the new spectrum and channel plan.

In addition, because it is not possible for MSS operators to engineer around the interference that would be caused to their systems by the mobile, higher-powered BAS service, it is not feasible for BAS incumbents to have a one-year right-of-return to the 1990-2025 MHz band in the event that facilities in the 2025-2110 MHz band do not prove comparable to the old facilities. Once the MSS service is launched in the 1990-2025 MHz band, it will be impossible as a technical matter for BAS incumbents to return to that spectrum. Accordingly, it is critical that BAS incumbents conclude relocation compensation negotiations expeditiously so that they have time to develop and thoroughly test replacement or modified equipment to ensure that it will function at the level of the existing equipment.

## **2. The Circumstances In Which Relocation Will Take Place Differ From Those Present In the PCS Proceedings.**

At the time that the Commission was undertaking to develop a relocation compensation scheme in the PCS proceedings, several PCS providers had already developed a new service that they were eager to bring to the market as soon as possible. The

<sup>14</sup> Some small markets do not employ official “frequency coordinators,” but the BAS licensees still engage in the process of sharing the spectrum and coordinating among themselves to determine how the BAS spectrum will be utilized to best meet the ENG needs in the market.

microwave incumbents, on the other hand, knew that their spectrum was highly valued (but not always essential) and sometimes “held out” in the old spectrum in the hopes of either obtaining “premiums” for early relocation or never having to relocate at all. For those microwave incumbents that agreed to or were forced to relocate, there was a variety of microwave radio equipment available, including analog and digital alternatives, that could operate in the spectrum to which they were moved. And if relocation posed unanticipated technical problems for a particular incumbent, the incumbent could be moved back to its old facilities (around which the PCS provider could engineer its system) until a solution could be found.

Once again, the BAS relocation involves a much different situation in its particulars, though not with respect to the general compensation principle. First, the MSS applicants are at varying stages of readiness to proceed with launching a service – one is nearly ready to launch, others are only in the early stages of development, and still others are planning to utilize the 2 GHz allocation for a second generation service. Those applicants that are not planning to launch service soon are not necessarily eager to proceed with establishing and paying compensation to support the relocation process.

Second, BAS incumbents are being asked to move to a significantly altered spectrum allocation at a time when no equipment is available that operates in the new spectrum. The parameters of the service will change dramatically when BAS incumbents are required to shift from operating in 17-18 MHz channels to 12-13 MHz channels. The channel size will be reduced by almost a third, and broadcast engineers and equipment manufacturers still are not certain what type of radio equipment will be necessary to provide a high-quality and reliable service in the significantly shrunken channels. The

channelization of 85 MHz of spectrum into seven 12-13 MHz channels became a possibility only shortly before the release of the *MO&O/Third NPRM*. Although the Joint Broadcasters are actively engaged in discussions with equipment manufacturers and are otherwise taking affirmative steps to investigate what equipment changes will be required – and what it will cost – to provide comparable ENG services in the new spectrum, there has simply not yet been time to conduct the kind of comprehensive testing that is needed to determine what equipment will operate satisfactorily in an entirely new spectrum channelization plan.

Third, BAS incumbents are being asked to vacate the spectrum in a relatively short time period, particularly in light of the lack of equipment available for operation in the new spectrum. As the Commission notes in the *MO&O/Third NPRM*, international agreements contemplate that portions of the spectrum allocated for MSS in this proceeding will be usable by MSS in the United States and Canada by January 1, 2000 and globally by January 1, 2005.<sup>15</sup> Of course, it is unreasonable at this point to expect that BAS incumbents will be able to negotiate compensation, obtain and test equipment modifications or as-yet-undeveloped replacement equipment and relocate their operations to the 2025-2110 MHz band by the January 2000 deadline. And BAS incumbents should not be forced to relocate before compensation has been paid and viable equipment is available to transition existing ENG operations to the drastically-reduced 2025-2110 MHz allocation.<sup>16</sup> Nonetheless, there

<sup>15</sup> *MO&O/Third NPRM*, ¶ 5 n.13.

<sup>16</sup> The Commission has provided that the allocation of the 1990-2025 MHz band of spectrum to the MSS service is conditioned on the relocation of the BAS incumbents. *See, e.g., MO&O/Third NPRM*, ¶ 16 (“[T]his Commission has authority to impose on Commission licensees conditions and obligations consistent with the public interest, convenience and necessity, including monetary obligations.”); *First Report & Order/FNPRM*, 12 FCC Rcd at 7401-02 (“[I]t is necessary to relocate BAS in order to accommodate MSS in the 1990-2025 MHz band,” and “[t]he costs of all steps necessary for clearing the 1990-2025 MHz band for MSS operations will be borne by MSS operators.”).  
(continued...)

is significant international pressure – which will only grow as the deadlines for the international availability of MSS spectrum draw closer – for the expeditious relocation of the BAS incumbents.

**B. The Relocation Compensation Scheme Should Advance The Goals Of The *Emerging Technologies* Principle While Reflecting The Unique Characteristics Of The BAS Relocation.**

The differences between the relocation of microwave incumbents by PCS entrants and the relocation of BAS incumbents by MSS entrants do not undermine the application here of the basic principle developed in the *Emerging Technologies* proceeding. The rationale underlying that principle is that providers of new technologies should be given reasonably expeditious access to spectrum to provide new services, but the benefit of making new services available should not come at the expense of incumbent services. As the Commission has concluded, that rationale is entirely applicable here, where MSS applicants seek the use of occupied spectrum for the MSS service.<sup>17</sup> Therefore, the relocation scheme established in this proceeding should (a) set a limited time period during which the parties can negotiate for relocation compensation and (b) provide that if no agreement is reached, new entrants that seek to use the spectrum must (i) pay all costs to relocate the incumbents, (ii) complete all activities necessary to implement new facilities for

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Thus, the MSS applicants have no right to force the BAS incumbents out of the spectrum before they have provided compensation for the move.

<sup>17</sup> *MO&O/Third NPRM*, ¶ 19 (“We find that the goals expressed in the *Emerging Technologies* proceeding of providing for the fair and equitable sharing of the 2 GHz spectrum, preventing disruption to incumbent operations, and minimizing the economic impact on incumbent licensees are unchanged and apply with equal weight to the present situation facing incumbent BAS licensees.”).

the incumbents, and (iii) build and test the new facilities to ensure that they are comparable to the old facilities.<sup>18</sup>

However, the differences between the two relocation situations do require changes in the way the *Emerging Technologies* compensation principle is implemented. As the above discussion demonstrates, it is important that negotiations be concluded relatively expeditiously so that BAS incumbents can proceed to implement the complex changes that will be necessary to make the relocation possible. On the other hand, the discussion also shows that while BAS incumbents realize the need to negotiate compensation and begin the relocation process quickly, some MSS entrants may be inclined to delay negotiations in order to put off the payment of compensation until their business plans are more certain. It is appropriate for the Commission to force these potentially recalcitrant MSS applicants to the relocation negotiation table because their expressions of interest in establishing the new service prompted the Commission to order BAS licensees to vacate the spectrum,<sup>19</sup> and it would be unfair to leave BAS incumbents in a state of perpetual uncertainty while the applicants delay the mandated relocation process indefinitely.

<sup>18</sup> See, e.g., Third Report and Order and Memorandum Opinion and Order, *In re Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, ET Docket No. 92-9, 8 FCC Rcd 6589, 6589-91 (1993). As noted above, it will not be possible as a technical matter to permit BAS incumbents a one-year right-of-return to the 1990-2025 MHz band if operation in the 2025-2110 MHz band proves unsuccessful.

<sup>19</sup> See, e.g., *First Report & Order/FNPRM*, 12 FCC Rcd at 7395 (justifying allocation of 70 MHz of spectrum to MSS partially on the ground that “[t]here is clearly substantial interest in providing MSS communications in the 2 GHz band, as demonstrated by the ten commenters who indicated they plan to provide mobile satellite service in the 2 GHz band,” and allocation of 70 MHz “will . . . provide sufficient bandwidth for the operation of multiple service providers”).

Thus, the Commission should modify the relocation compensation scheme both to account for the differences between the services and circumstances involved in the BAS and PCS relocations and simultaneously to promote the underlying goal of the *Emerging Technologies* compensation principle – the fair and expeditious reallocation of spectrum to assure the availability of spectrum for both new technologies *and* existing services that serve the public interest. In particular, the Commission should simplify the relocation process so that negotiations occur expeditiously and, if unsuccessful, are simply followed by mandatory relocation of BAS incumbents upon mandatory payment by MSS applicants of the actual and reasonable costs of relocation to comparable facilities. Specific changes are outlined below.

**1. BAS Incumbents and MSS Entrants Should Negotiate Collectively.**

As the Joint Broadcasters and others proposed in comments filed earlier in this proceeding, the FCC should permit NAB and MSTV together to negotiate collectively on behalf of all BAS licensees conducting broadcast operations.<sup>20</sup> Relocation agreements reached as a result of these negotiations should be binding on all broadcast industry BAS licensees,<sup>21</sup> except those who choose to opt out of collective negotiation.<sup>22</sup>

<sup>20</sup> Joint Comments of the Association for Maximum Service Television, Inc., the National Association of Broadcasters and the Radio Television News Directors Association, ET Docket No. 95-18, at 7-9 (June 23, 1997).

<sup>21</sup> NAB and MSTV should not be responsible for negotiating on behalf of Cable Television Relay Service or Local Television Transmission Service operators that also use the BAS spectrum. However, once the NAB/MSTV negotiating entity has been established, the Commission could consider permitting other non-broadcast licensees in the 1990-2025 MHz band to voluntarily choose to “opt into” a negotiated agreement.

<sup>22</sup> Those BAS incumbents that choose to engage in separate relocation negotiations should be free to do so, but for most BAS licensees collective negotiation will be simpler.

Collective negotiation is critical to the success of the BAS relocation because, as noted above, coordinated relocation is necessary due to the way in which BAS licensees share the spectrum. Collective negotiation will facilitate coordinated relocation and enable it to take place on an expedited schedule. Further, there are a large number of broadcast BAS licensees,<sup>23</sup> and forcing them all to negotiate individually would result in high transaction costs for both MSS operators and BAS incumbents. Collective negotiation would reduce negotiation time and transaction costs, enabling MSS operators to devote more of their resources to bringing a new competitive mobile communications service to the public.

NAB and MSTV are the appropriate parties to represent BAS licensees in collective negotiations. Because they represent more than 1,200 and 330 broadcast television stations respectively, NAB and MSTV are intimately familiar with BAS operations. They also possess the necessary resources, expertise and contacts to accurately assess the equipment needs of BAS incumbents. Finally, both NAB and MSTV have traditionally represented the interests of television broadcasters in situations in which complex negotiation, advocacy, and, in some cases, fiduciary obligations have been involved. For example, NAB has represented broadcasters in the proceedings and financial distributions related to cable television copyright royalties. NAB and MSTV together coordinated the funding and operation of the Advanced Television Test Center and

<sup>23</sup> According to *Broadcasting & Cable*, March 16, 1998, there are 1,202 commercial and 367 noncommercial television stations. A survey conducted by NAB to update information previously submitted to the Commission indicates that those stations own an average of 4.3 BAS transmitters and 3.3 BAS receivers each. Brian Savoie & Kelly Williams, *2 GHz Facilities Evaluation: 1998 Edition* (Ex. A).

organized the nation's broadcasters into 10 regional groups that worked together to address DTV allotment/assignment issues.

The Commission should also require all MSS applicants to participate in the negotiation process in some joint fashion.<sup>24</sup> For example, the Commission could require all applicants to post a performance bond to cover relocation costs or to become members of an organization similar to UTAM, Inc., which was formed by the Unlicensed PCS Ad Hoc Committee for 2 GHz Microwave Transition and Management to manage the relocation of incumbent microwave systems to make spectrum available for unlicensed PCS devices.<sup>25</sup> A UTAM-like organization could collect fees from MSS applicants and be responsible for calculating and disbursing compensation to individual BAS incumbents. Alternatively, the Commission could, as in the PCS context, require the MSS operator that first initiates service to pay all BAS relocation costs, subject to reimbursement by later entrants. Whatever mechanism is developed, it must assure that BAS incumbents are not required to relocate until provision has been made for full compensation.

**2. The Commission Should Adopt A Single, Mandatory Negotiation Period.**

The *Third NPRM* proposes to adopt a two-stage relocation negotiation structure involving, as in the case of PCS, one year of voluntary and one year of mandatory

<sup>24</sup> As discussed above, it is appropriate for the Commission to require all MSS *applicants* to participate in the relocation compensation process. Any applicants that are not sufficiently committed to developing MSS systems to be willing to participate in negotiations and pay their fair share of relocation costs should forfeit their license applications. Those that remain should be required to participate.

<sup>25</sup> See Fourth Memorandum Opinion and Order, *In re Amendment of the Commission's Rules to Establish New Personal Communications Services*, GEN Docket No. 90-314, 10 FCC Rcd 7955 (1995).

negotiations.<sup>26</sup> The Joint Broadcasters urge the Commission to abandon the voluntary period and adopt a single, mandatory two-year negotiation period that will commence 60 days after the effective date of the Commission's order.<sup>27</sup> Congressional action and other factors have already significantly delayed this proceeding. As discussed above, it is important that the incumbents and new entrants reach a relocation compensation agreement expeditiously so that broadcasters and equipment manufacturers can begin to develop and implement the equipment changes necessary for BAS incumbents to make the 1990-2025 MHz band available for MSS use within the timeframes contemplated in the relevant international agreements.

Past experience demonstrates that an initial voluntary negotiation period would complicate matters and slow the relocation process. In the *PCS* proceeding, the voluntary negotiation period was widely regarded as a mistake because of the extent to which it complicated and delayed relocation. For example, there was conflict between the incumbents and PCS entrants over whether or not negotiations should even commence during the voluntary negotiation period. If no negotiations occurred during a voluntary negotiation period in this proceeding, it would mean another year of inaction in a process that is already far behind schedule.

Moreover, as discussed above, MSS applicants that are only in the early stages of development have incentives to delay negotiation to put off paying compensation.

<sup>26</sup> *MO&O/Third NPRM*, ¶ 44.

<sup>27</sup> As noted above, however, BAS incumbents should not be required to move into the new spectrum before viable equipment is available. Accordingly, if unexpected delays in the development of equipment render negotiation within the two-year period impossible because of a lack of sufficient technical information, the parties should be able to obtain an extension of the negotiation period.

But it would be unfair to subject BAS incumbents to such uncertainty and delay. The ENG services they provide are of critical importance to the local communities broadcasters serve, and BAS incumbents need to receive compensation in time to purchase and test equipment to assure that relocation will take place with minimal disruption to those services. Accordingly, the Commission should require all parties to begin negotiating in good faith soon after the order adopting the outlines of the relocation plan becomes effective.

**3. The Commission Should Strictly Enforce The Obligation To Negotiate In Good Faith.**

The *Third NPRM* proposes to apply the good faith guidelines in Section 101.73 of the Commission's Rules during mandatory negotiations.<sup>28</sup> The Joint Broadcasters agree that the Section 101.73 guidelines should govern, and urge the Commission to strictly enforce the obligation to negotiate in good faith. There is reason to believe that MSS applicants may not take negotiations seriously, both because of the disincentives to negotiation discussed above and because of the recent ICO filing, which indicates that even the MSS applicant with the most pressing need for access to the spectrum still refuses to accept the basic compensation principle to be implemented through the negotiations.<sup>29</sup> In general, however, MSS applicants that have a serious desire to build and operate their systems would benefit from the prospect of appropriate intervention by the Commission. Otherwise, speculative or recalcitrant MSS applicants could block progress and impair the serious applicants' plans to launch new satellite services. Thus, the Commission should monitor the negotiations and be available to resolve disputes informally. When necessary,

<sup>28</sup> *MO&O/Third NPRM*, ¶ 46.

<sup>29</sup> Petition for Further Limited Reconsideration of ICO Services Limited, ET Docket No. 95-18 (Jan. 19, 1999).

the Commission should step in to compel good faith negotiation. Action that might be taken in such circumstances could include ordering a recalcitrant party to make a *bona fide* compensation offer, provide an independent estimate of relocation costs or provide information necessary to the negotiations.

**4. Relocation Expenses Must Fully Compensate BAS Incumbents.**

As the Commission affirmed in the *MO&O/Third NPRM*, MSS applicants should pay all BAS relocation expenses in accordance with the *Emerging Technologies* compensation principle. Relocation expenses should include all engineering expenses, equipment costs, transactional costs, FCC fees and any additional actual costs. Moreover, as discussed above, relocation expenses must cover the costs of *comparable* equipment, *i.e.*, equipment that is at least equivalent to existing facilities in terms of video and audio performance, transmission robustness and reliability, and equipment functionality and features.<sup>30</sup> Relocation expenses should include the costs of installing and testing the new equipment for such comparability. Finally, as in the case of PCS, relocation expenses should be paid up-front, prior to any actual retrofitting, retuning or replacement of equipment.

**5. Certain Details Of Relocation Should Be Determined In The Negotiation Process.**

The *Third NPRM* seeks comment on a number of issues relating to how relocation and compensation will occur. These comments address those issues with sufficient definiteness to permit the Commission to proceed, but, as in the case of PCS,

<sup>30</sup> See *supra* pp. 4-5.

certain details should be left to the negotiation process.<sup>31</sup> Matters that can be finalized in negotiations include:

Acceptable replacement equipment. Although, as discussed above, the Commission should guide the negotiation process by clarifying in its order the respects in which replacement or modified ENG equipment must achieve equivalency in order to be considered “comparable” to existing facilities, the Commission need not determine the precise technical specifications for comparable equipment. Because testing is not complete and equipment has not been developed, neither the Commission nor the parties can know at this time what the characteristics of comparable equipment will be, or whether equipment will need to be retuned or replaced.<sup>32</sup> Later on, if the parties cannot agree on what equipment is required to satisfy the “comparability” criteria, the Commission should step in to resolve the dispute.

Collection of detailed information on BAS licensees and equipment. The NAB has gathered information on existing BAS licenses and equipment held by broadcasters to update the information previously submitted to the Commission. The results of the NAB survey are attached as Exhibit A. This information is sufficient to provide the Commission with an overview of what will be entailed in the BAS relocation, and more detailed information is not needed to finalize the governing principles and procedures for the

<sup>31</sup> In the event that negotiations are unsuccessful, the Commission may need to confront these questions in the setting of a fully-developed record.

<sup>32</sup> Although the Joint Broadcasters are engaged in ongoing discussions with equipment manufacturers, we have found that the manufacturers have thus far not been able to provide much specific information about replacement equipment, since they are only just beginning to design equipment that will be able to operate in the spectrum parameters proposed only a few months ago in the *MO&O/Third NPRM*.

relocation process.<sup>33</sup> The unassailable fairness of the relocation compensation principle should not be affected by more precise relocation cost calculations.<sup>34</sup> In any event, the more detailed information that will be needed for purposes of calculating compensation to individual incumbents cannot be developed until the negotiation process has started.

## **6. The Sunset Feature Should Be Modified.**

As described above, in the PCS context some incumbents could move into the new spectrum while others remained in the old because, unlike BAS, they did not operate as a cooperative whole and because, unlike MSS, the new entrants did not need to vacate the entire spectrum block. Therefore, it was reasonable and efficient to allow the parties to leave some incumbents in place, and a sunset of the compensation requirement – ten years after the conclusion of the negotiation process – made sense. So also it was reasonable that an incumbent who received the benefit of 10 additional years without having to move would not be entitled to compensation for relocation after that period had elapsed. Here, at the end of the negotiation process all incumbents will have to move to make the new service possible. Accordingly, they should be required to move at that time, but pursuant to the principle of reasonable compensation.

<sup>33</sup> A more detailed and more current survey of the BAS equipment presently deployed would be a burdensome undertaking and would not be useful for estimating the compensation that will eventually be paid, since such a survey would be incomplete, would become less reliable as broadcasters expand and improve their ENG services to respond to consumer demand, and could not factor in equipment costs that will not be known until after this proceeding is finalized and negotiations have commenced.

<sup>34</sup> See *MO&O/Third NPRM*, ¶ 26 (“[T]he scale of the contemplated relocation does not affect the goals of providing for the fair and equitable sharing of 2 GHz spectrum, preventing disruption to incumbent operations, and minimizing the economic impact on incumbent licensees.”).

**III. THE COMMISSION SHOULD NOT IMPOSE LIMITATIONS ON BAS ACTIVITIES THAT HAVE THE EFFECT OF RENDERING BAS SECONDARY TO GOVERNMENT SPACE SERVICES.**

In the *Third NPRM* the Commission proposes to grant co-primary status to Government space operation (Earth-to-space and space-to-space), Earth exploration satellite (Earth-to-space and space-to-space) and space research (Earth-to-space and space-to-space) services in the 2025-2110 MHz band. The Joint Broadcasters do not object to sharing this spectrum with the Government space operations on a co-primary basis. However, we do object to one of the interference protection provisions proposed in the *Third NPRM* because it would have the effect of rendering BAS secondary to Government space operations, which would be inconsistent with a “co-primary” allocation.

The proposed rules amending Section 2.106 of the Commission’s rules contain a footnote that provides in relevant part:

To facilitate compatible operations between non-Government terrestrial receiving stations located at fixed sites and Government earth station transmitters coordination is required. *To facilitate compatible operations between non-government terrestrial transmitting stations and Government spacecraft receivers, the terrestrial transmitters shall not be high-density systems.*<sup>35</sup>

The highlighted limitation apparently prohibits BAS licensees from conducting high-density operations. However, it is sometimes necessary for BAS licensees to conduct high-density operations to provide ENG services, especially when a particularly newsworthy event, like Senator John Glenn’s space shuttle launch, merits extensive coverage. In those circumstances, it should be sufficient, and consistent with their “co-primary” status, for the Government space and BAS licensees to coordinate among themselves to prevent

<sup>35</sup> *MO&O/Third NPRM*, App. B.

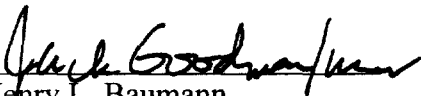
interference to their respective services. By apparently categorically prohibiting BAS licensees from conducting high-density operations, the proposed rule would in fact render BAS secondary to the Government space operations – a consequence that is neither consistent with the co-primary allocation the Commission proposes nor necessary to protect the Government operations.

### **CONCLUSION**


In accordance with the foregoing, the Commission should adopt a final spectrum allocation and relocation compensation plan that gives broadcasters and equipment manufacturers certainty about the channelization plan to which they must adapt their operations and assures that BAS licensees will be compensated for their move and relocated expeditiously to the new spectrum.

Respectfully submitted,


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February 3, 1999



# **2 GHz Facilities Evaluation: 1998 Edition**

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National Association of Broadcasters  
Washington, D.C.**

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# Introduction

## Overview

This report presents a detailed assessment of NAB's 2 GHz Facilities Survey. It encapsulates the responses of station chief engineers concerning their stations' ownership and usage of 2 GHz microwave equipment.

We estimate, based on this survey, that the installed base of 2 GHz equipment consists of as many as 6,450 2 GHz transmitters, 2,400 2 GHz stand-alone power amplifiers, and 4,900 2 GHz receivers<sup>1</sup>. Given the high response rate (72%) and the similarity of the composition of the respondents and the television station population, we believe these estimates are sound.

Not only is a great deal of this equipment owned by stations, but this equipment is owned by a vast majority of stations. Three quarters (75%) of respondents reported owning 2 GHz microwave equipment. When only ABC, CBS, and NBC affiliates are considered, more than 96% of respondents report owning 2 GHz microwave equipment.

Additionally, overall equipment ownership has been on the rise since 1991. Since a similar survey conducted in 1995, transmitter ownership has increased by 13.7%, while receiver ownership has increased by 12.8%. Further breakouts of these data are available beginning on page 14.

It is also important to note:

- Respondents reported owning an average of 4.3 transmitters.
- Respondents reported owning an average of 3.3 receivers.
- In smaller markets, the number of respondents reporting 2 GHz microwave equipment ownership increases.

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<sup>1</sup> [Average number of transmitters, stand-alone power amplifiers or receivers owned by commercial stations] \* [Total number of commercial television stations (as reported in Broadcasting & Cable, March 16, 1998)] + [Average number of transmitters, stand-alone power amplifiers or receivers owned by non-commercial stations] \* [Total number of non-commercial television stations (as reported in Broadcasting & Cable, March 16, 1998)]

## **Methodology**

A one-page questionnaire was faxed to television station engineering directors and chief engineers during late February 1998. Of the 1,298 questionnaires where fax contact was attempted, 875 usable questionnaires were returned in time for tabulation, while 81 were reported undeliverable. This results in a response rate of 72%.

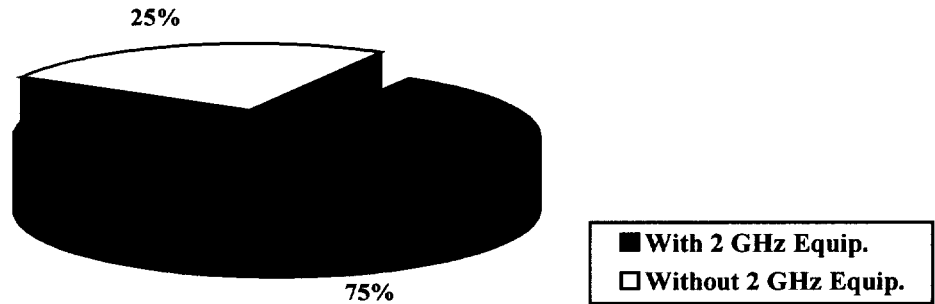
Because this is an attempted census, there is no way to estimate sampling error. There may be differences in reporting by the 28% of engineering directors and chief engineers that did not respond.

An analysis of the respondents is given on page 17.

## 2GHz Microwave Equipment Ownership

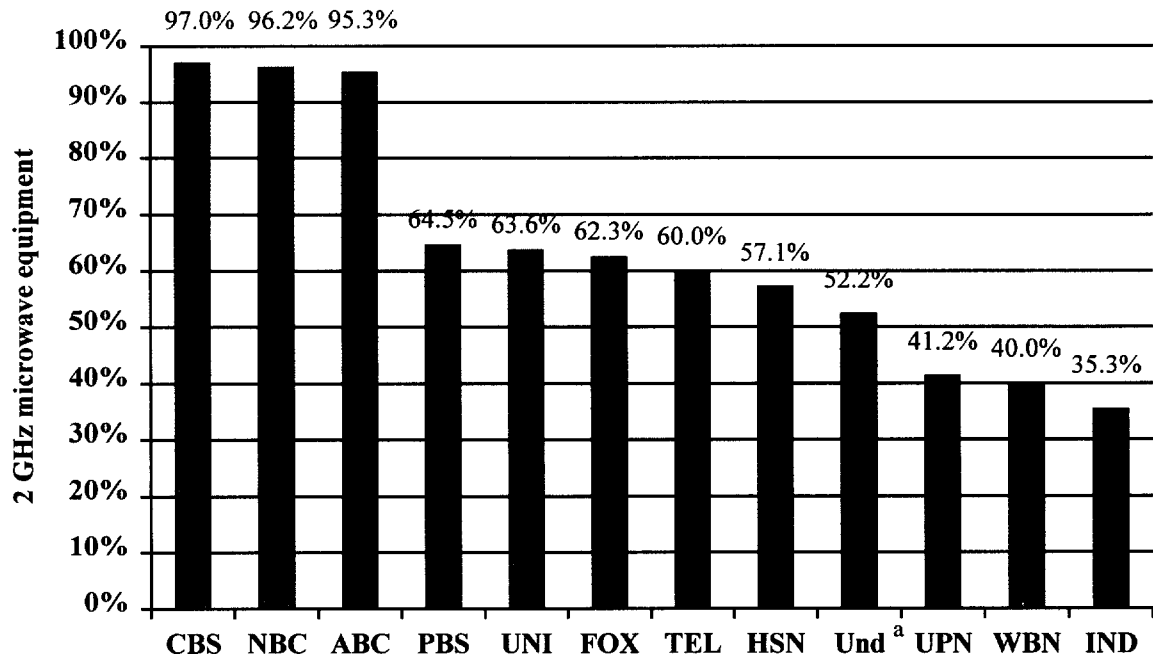
Three quarters of respondents (75%) reported that their stations own 2 GHz microwave equipment.

**Figure 1: 2 GHz Microwave Equipment Ownership (n=875)**



Almost all ABC, CBS, and NBC affiliated respondent stations reported owning 2 GHz equipment. The other networks fell far short with PBS, Univision and Fox respondents reporting that fewer than two-thirds of their stations have 2 GHz microwave equipment. Stations representing UPN, the WB Network, as well as true independent respondents reported less than half of their stations have 2 GHz microwave equipment. Figure 2, shows the percentage of respondents with 2 GHz equipment for all of the networks.

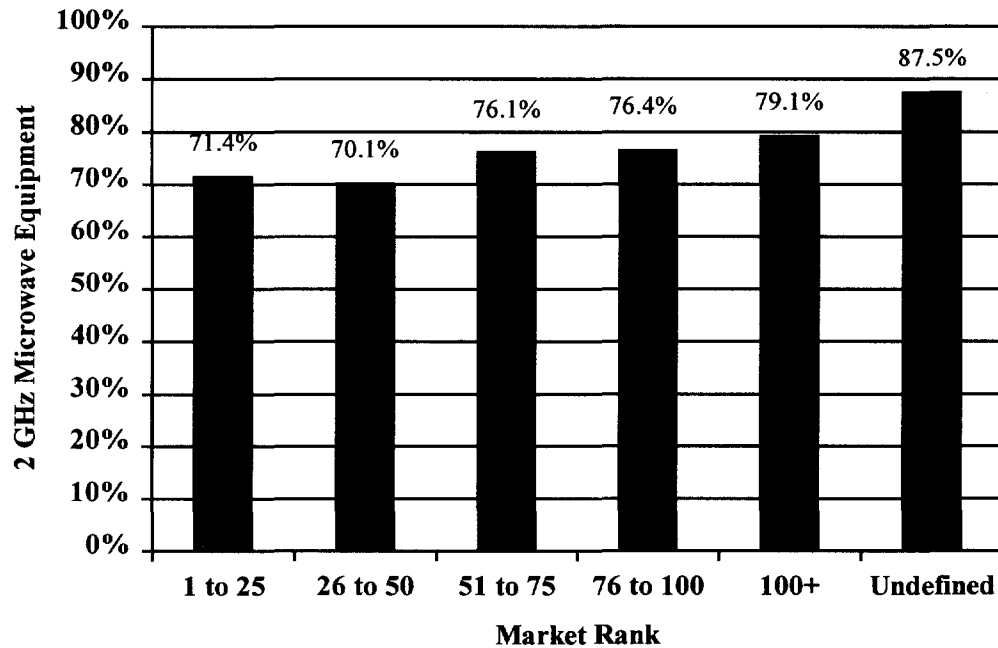
**Figure 2: Network Affiliates 2 GHz Microwave Equipment Ownership (n=875)**



a - Refers to respondents where affiliation information was unavailable.

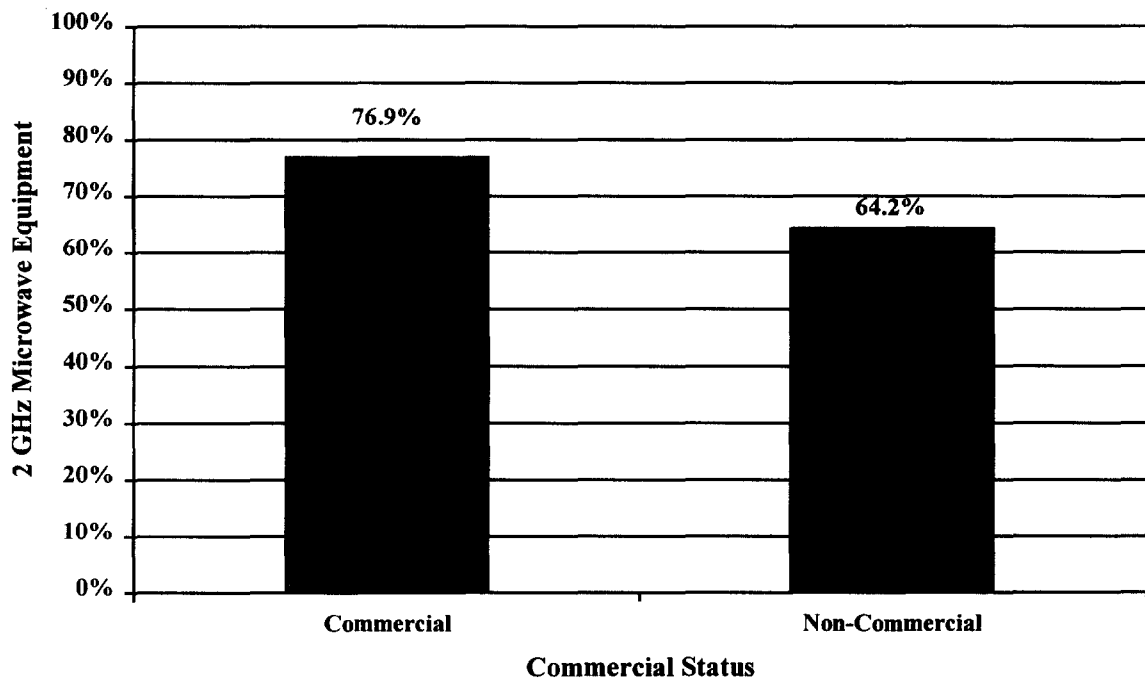
Interestingly, a greater percentage of respondents from markets greater than 51 reported having 2 GHz microwave equipment than those in markets 1 to 50. However, as will be shown in later discussion, while more stations in smaller markets own some equipment, each respondent in larger markets (1 through 50) averaged far more 2 GHz transmitters, receivers, and stand-alone power amplifiers than respondents in markets ranked greater than 50.

**Figure 3: Respondents with 2 GHz Equipment by Market Rank (n=875)**



More than three-quarters (76.9%) of respondents from commercial stations reported ownership of 2 GHz microwave equipment. As you can see in Figure 4, that is greater than the more than three-fifths (64.2%) of non-commercial station respondents that reported owning 2 GHz microwave equipment.

**Figure 4: Commercial Station 2 GHz Microwave Equipment Ownership (n=875)**



## 2 GHz Transmitter Ownership

Stations were asked how many 2 GHz transmitters they owned. Answers varied widely. Among all respondents, the average station reported it owned 4.3 transmitters. The lowest number of 2 GHz transmitters owned was 0, while the highest was 45. One fourth of respondents reported that they had 6 or more transmitters, half reported that they had 3 or more transmitters. Another quarter reported they had no transmitters.

Stations were asked how many of these transmitters were installed in ENG vehicles, were portable units, or were installed at fixed locations. The table below shows the number of transmitters for each of these constituent areas for all respondents.

**Table 1: 2 GHz Transmitters by Use**

	ENG Vehicles	Portable Units	Fixed Units
<b>Minimum</b>	0	0	0
<b>25<sup>th</sup> Percentile</b>	0	0	0
<b>Median</b>	1	1	0
<b>Mean</b>	1.8	1.3	1.4
<b>75<sup>th</sup> Percentile</b>	3	2	2
<b>Maximum</b>	30	45	42
<b>(n)</b>	(875)	(875)	(875)

Of the respondents that reported their station owns 2 GHz microwave equipment,<sup>2</sup> the average station reported it owned 5.8 transmitters. The lowest number of 2 GHz transmitters was 0<sup>3</sup> while the highest was 45. One quarter reported they had 7 or more transmitters, half reported they had 4 or more transmitters, while another quarter reported having 2 or more transmitters.

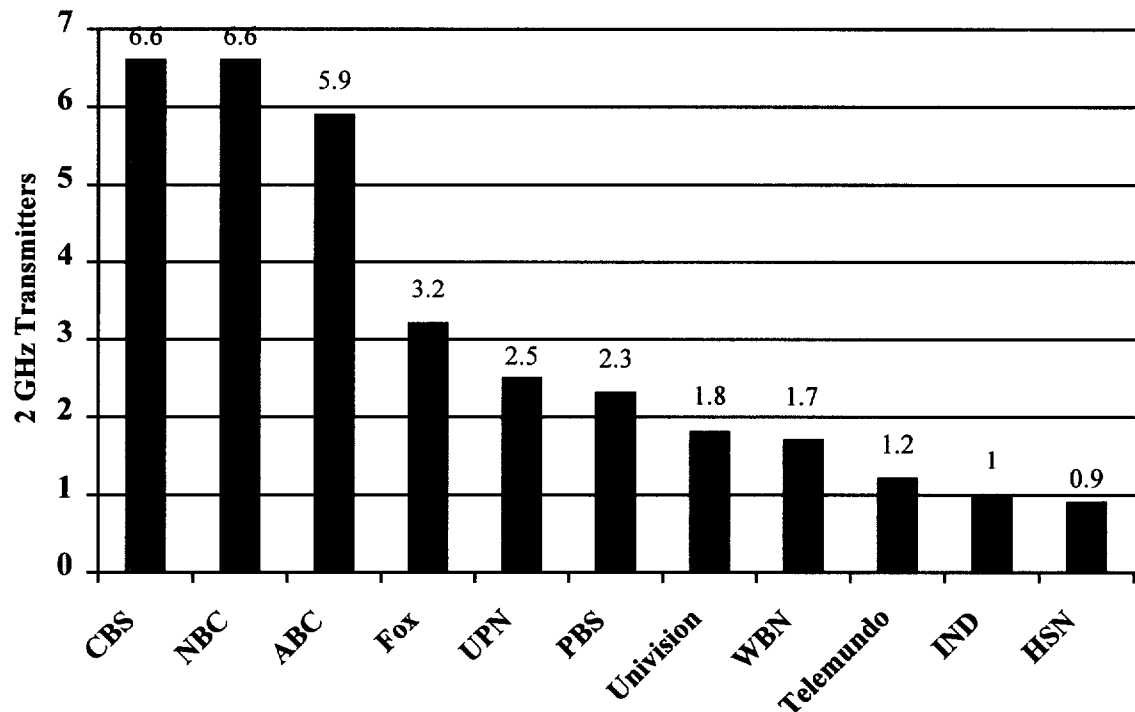
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<sup>2</sup> Referring only to the 75% of respondents reporting they owned 2 GHz microwave equipment

<sup>3</sup> 0 was only considered an illegal value if the respondent reported owning 2 GHz microwave equipment, while also claiming they did not own any transmitters, receivers or stand-alone power amplifiers.

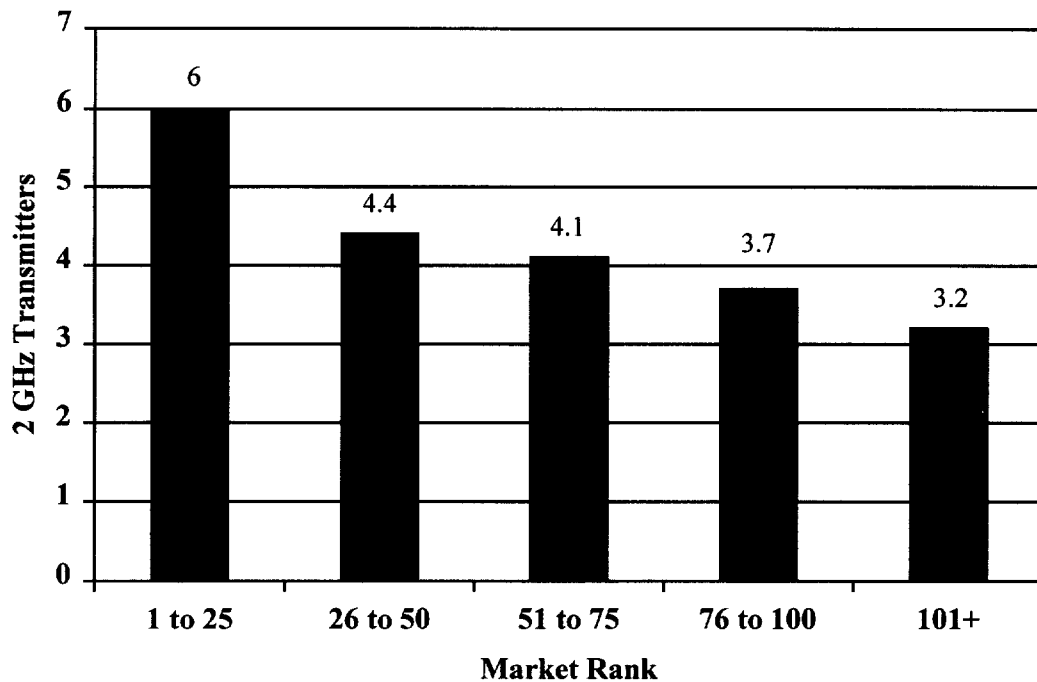
Of the network affiliates, CBS and NBC averaged the greatest number of 2 GHz transmitters with an average of 6.6 per respondent. ABC fell in a close third with an average of 5.9 transmitters per respondent. Interestingly, UPN stations that had 2 GHz equipment average 6.1 transmitters per respondent rivaling ABC's 6.2 transmitters per respondent, when all responses are utilized UPN respondents only averaged 2.5 transmitters per respondent.

**Figure 5: Average Number of 2 GHz Transmitters Owned by Affiliates**



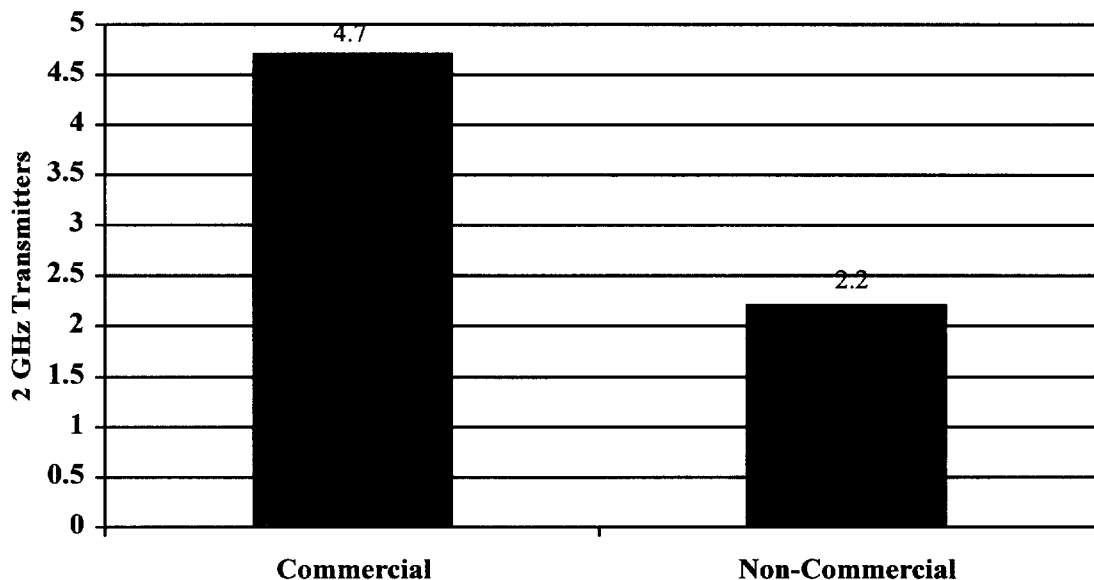
The average number of 2 GHz transmitters that respondents reported owning decreased as their market rank increased. Figure 6 shows this trend.

**Figure 6: Average Number of 2 GHz Transmitters Owned by Market Rank**



The average commercial station respondent reported owning more 2 GHz transmitters than non-commercial station respondents. Figure 7 shows this difference.

**Figure 7: Average Number of 2 GHz Transmitters Owned by Commercial/Non-commercial Stations**



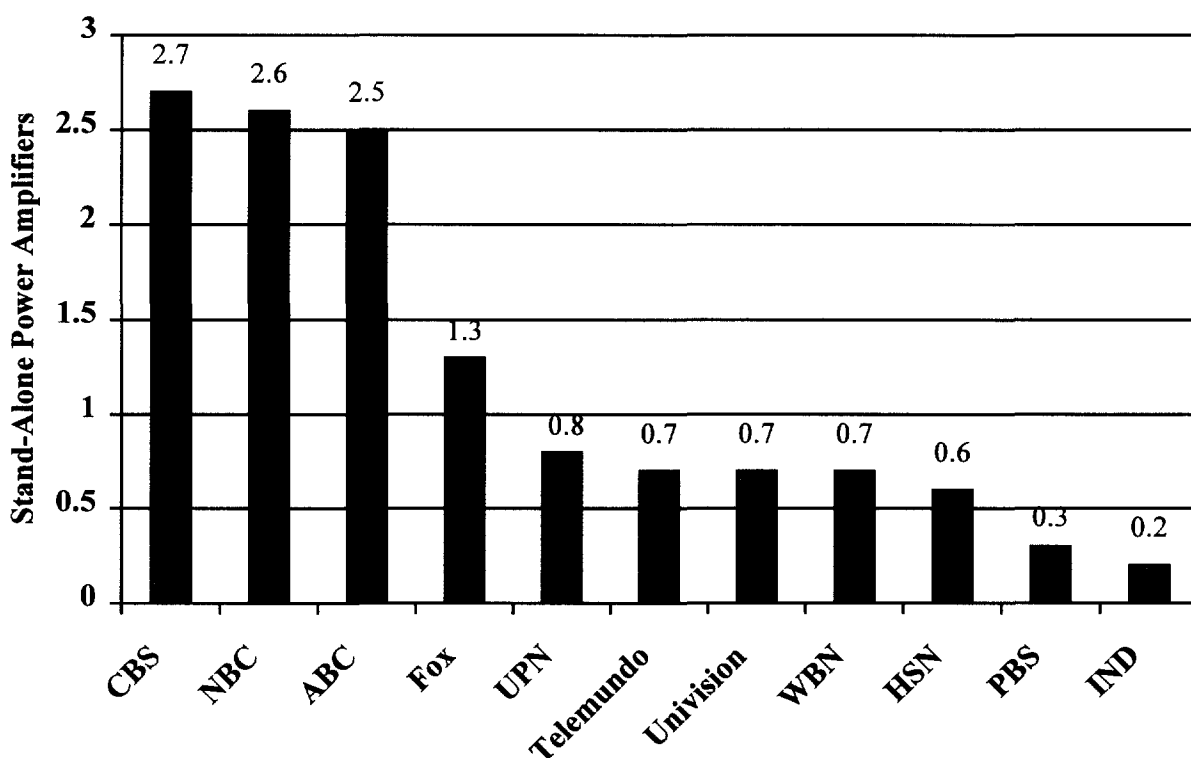
## 2 GHz Stand-Alone Power Amplifier Ownership

Stations were asked how many 2 GHz stand-alone power amplifiers their station owned. Answers varied widely. The average station reported it owned 1.6 stand-alone power amplifiers. The lowest number of 2 GHz stand-alone power amplifiers owned was 0 while the highest was 30. One fourth of respondents reported they had 2 or more stand-alone power amplifiers, half reported they had 1 or more stand-alone power amplifiers. Another quarter reported they had no stand-alone power amplifiers.

Of the respondents that reported their station owns 2 GHz microwave equipment, the average station reported it owned 2.2 stand-alone power amplifiers. The lowest number of stand-alone power amplifiers was 0 while the highest was 30. One quarter reported they had 3 or more stand-alone power amplifiers, half reported they had 1 or more stand-alone power amplifiers, while another quarter reported having no stand-alone power amplifiers.

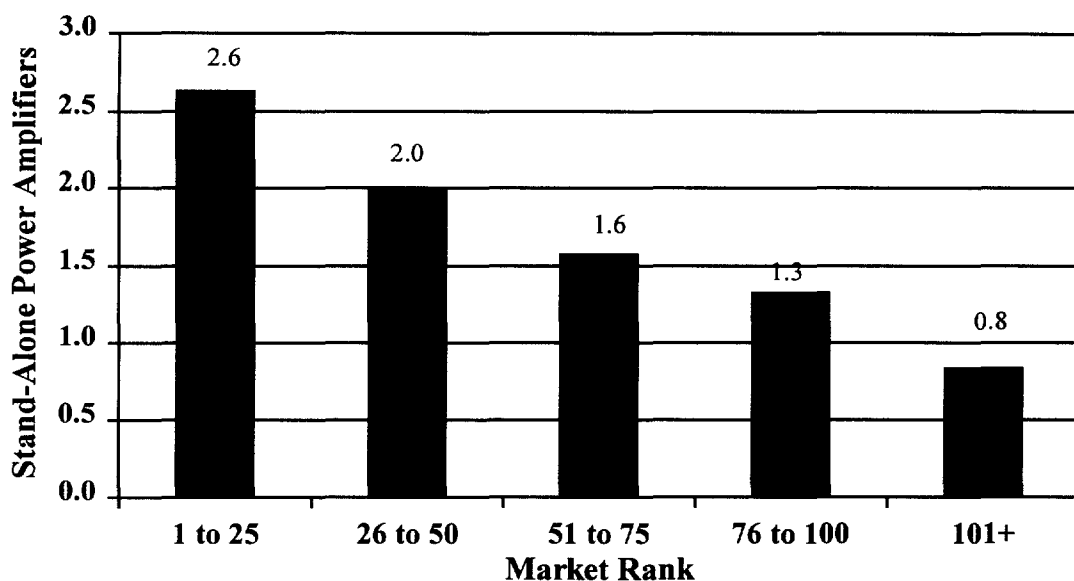
Of the network affiliates, CBS stations reported owning on average more 2 GHz stand-alone power amplifiers than any other network affiliate with NBC and ABC following closely behind. Shown below, other network affiliates fell well short of the ownership levels of these three networks.

**Figure 8: Average Number of 2 GHz Stand-Alone Power Amplifiers Owned by Affiliate**



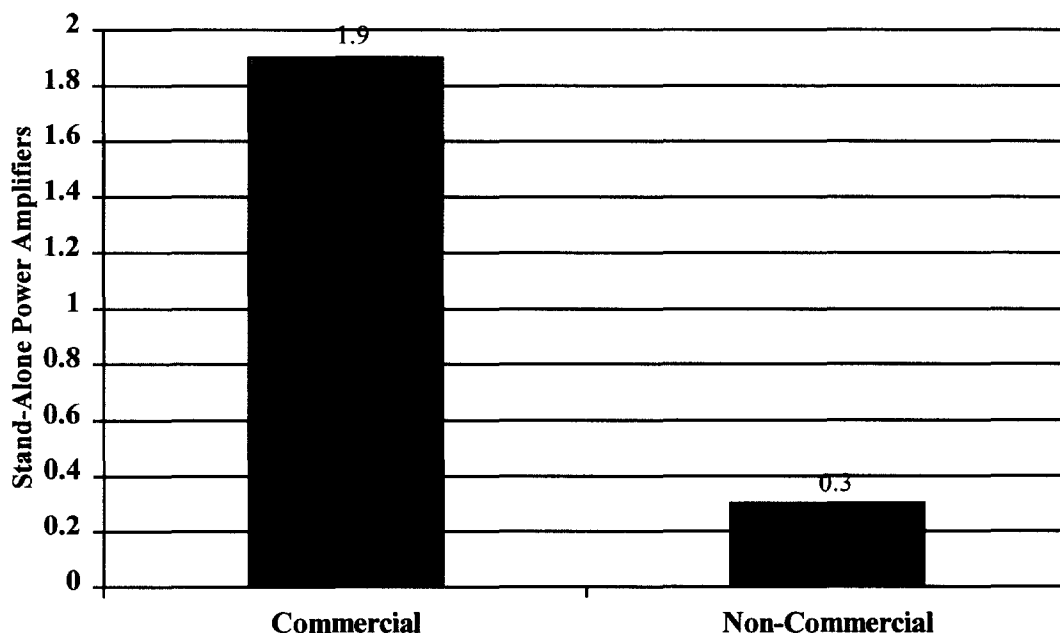
The average number of 2 GHz stand-alone power amplifiers that respondents reported owning decreased as their market rank increased. Figure 9 shows this trend.

**Figure 9: Average Number of 2 GHz Stand-Alone Power Amplifiers Owned by Market Rank**



The average commercial station respondent reported owning more than 6 times the number of 2 GHz stand-alone power amplifiers than non-commercial station respondents. Figure 10 below shows this difference.

**Figure 10: 2 GHz Stand-Alone Power Amplifiers Owned by Commercial/Non-commercial Stations**



## 2 GHz Receiver Ownership

Stations were asked how many 2 GHz receivers they owned. Answers varied widely. The average station reported it owned 3.3 receivers. The lowest number of 2 GHz receivers owned was 0 while the highest was 46. One fourth of respondents reported they had 5 or more receivers, half reported they had 2 or more receivers. Another quarter reported they had no receivers.

Stations were asked how many of these receivers were installed in fixed locations or how many were portable units. Table 2 shows the number of receivers for each of these usage areas for all stations responding.

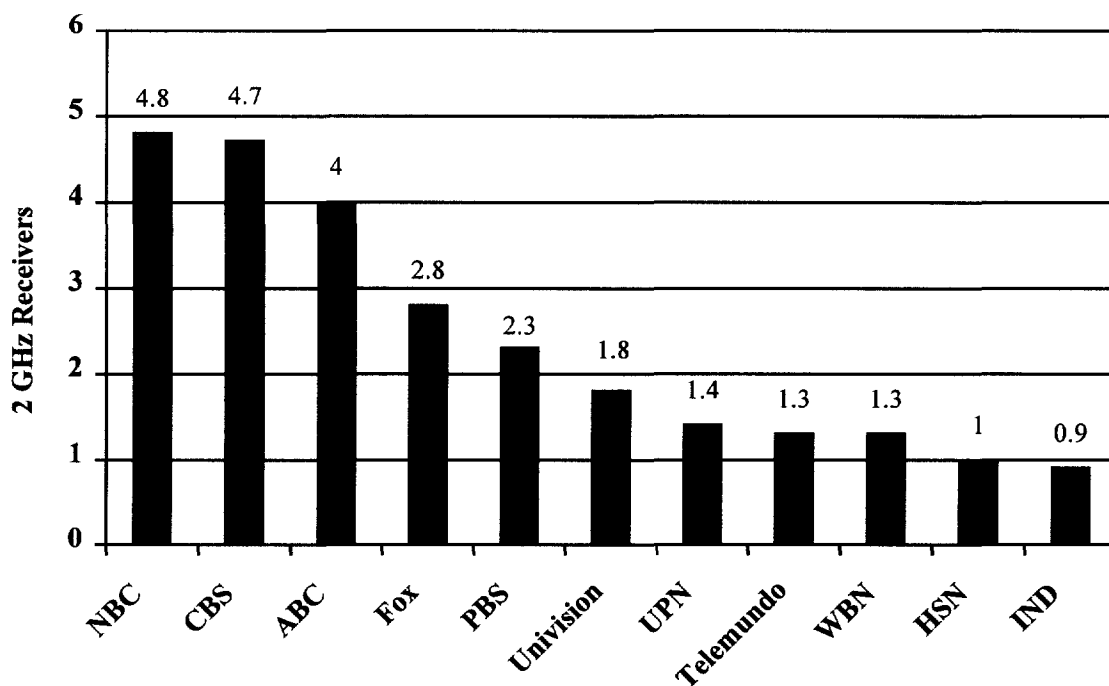
**Table 2: 2 GHz Receivers by Use**

	<b>Fixed Units</b>	<b>Portable Units</b>
<b>Minimum</b>	0	0
<b>25<sup>th</sup> Percentile</b>	0	0
<b>Median</b>	2	0
<b>Mean</b>	2.48	0.8
<b>75<sup>th</sup> Percentile</b>	4	1
<b>Maximum</b>	45	32
<b>(n)</b>	(875)	(875)

Of the respondents that reported their station owns 2 GHz microwave equipment, the average station reported it owned 4.4 receivers. The lowest number of 2 GHz receivers was 0 while the highest was 46. One quarter reported they had 5 or more receivers, half reported they had 3 or more receivers, while another quarter reported having 2 or more receivers.

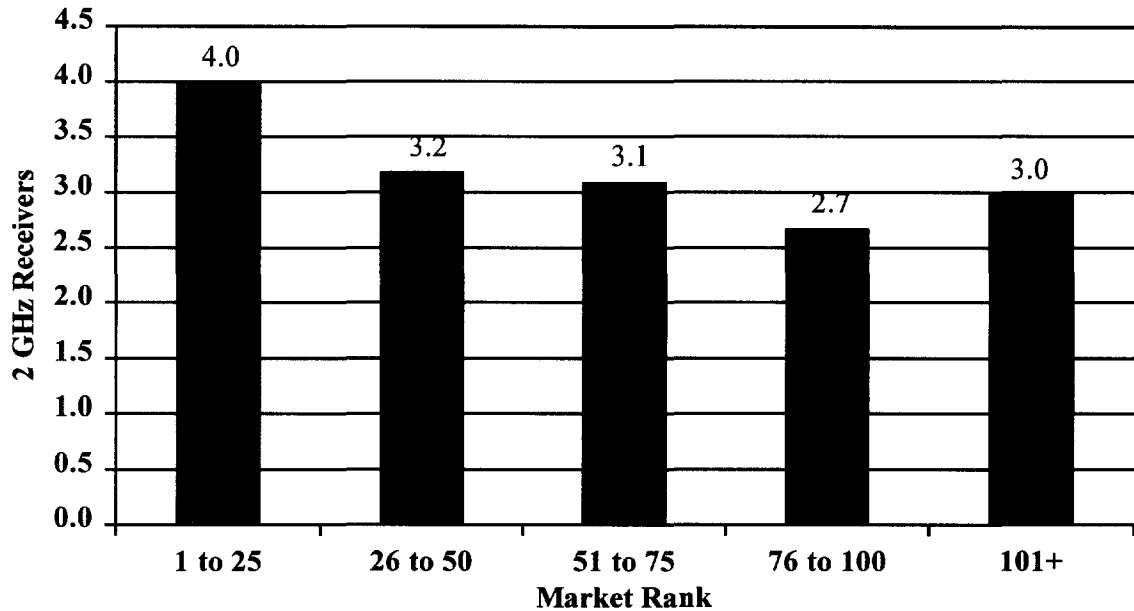
Of the network affiliates, NBC affiliates reported owning on average more 2 GHz receivers than any other network affiliate with CBS following closely behind. ABC fell behind Fox when only respondents with 2 GHz microwave equipment were considered, however when all responses were considered ABC's average number of 2 GHz receivers is closer to that of CBS and NBC. As shown below, other network affiliates fell well short of the ownership levels of these three networks.

**Figure 11: Average Number of 2 GHz Receivers Owned by Affiliate**



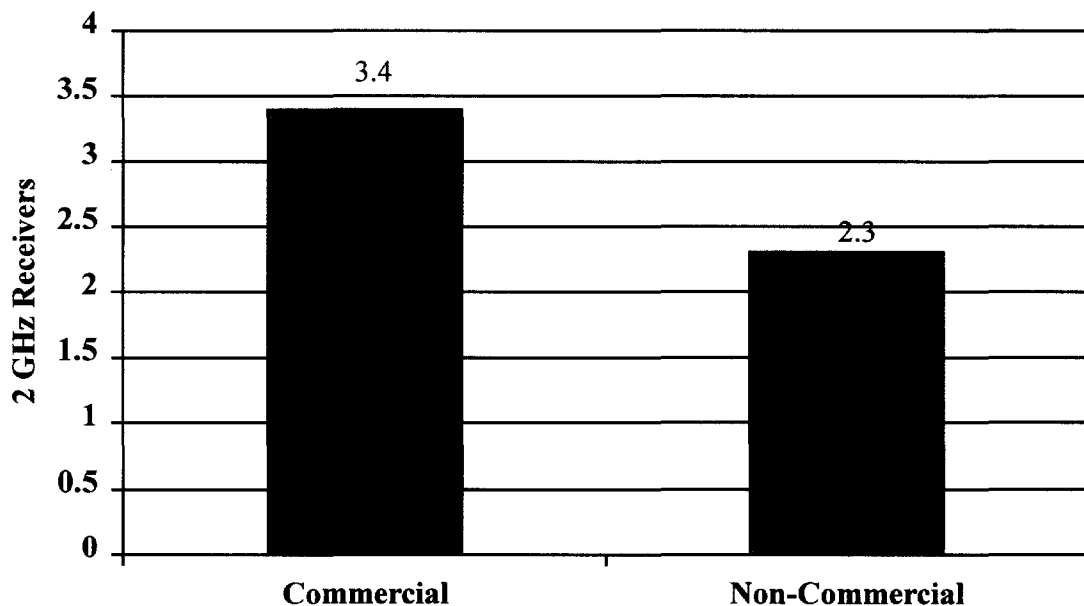
The average number of 2 GHz receivers respondents reported owning decreased as their market rank increased through market 100. Interestingly, stations in markets greater than 100 averaged more 2 GHz receivers than those stations in markets 51 to 100. Figure 12 shows this trend.

**Figure 12: Average Number of 2 GHz Receivers Owned by Market Rank**



The average commercial station respondent reported owning more 2 GHz receivers than non-commercial station respondents. Figure 13 below shows this difference.

**Figure 13: 2 GHz Receivers Owned by Commercial/Non-commercial Stations**



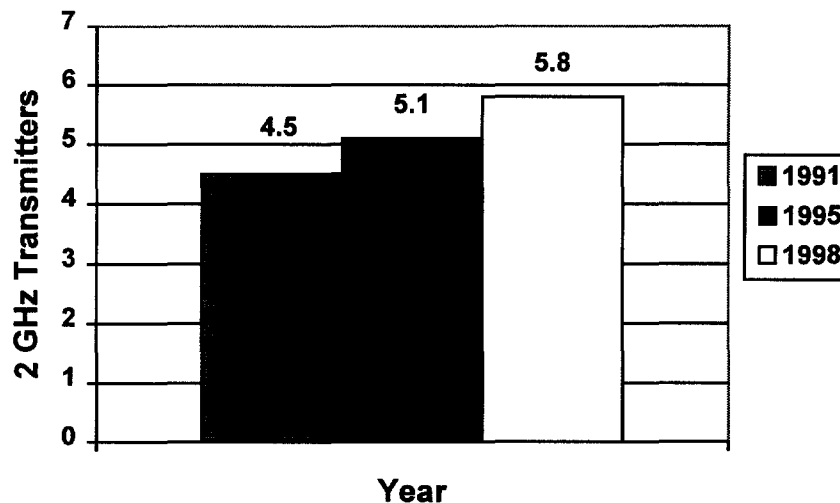
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## Comparisons with Previous Research<sup>4</sup>

### 2 GHz Transmitter Ownership Increases

The average number of 2 GHz transmitters owned by stations has increased steadily over the past seven years. Between 1991 and 1995, the average ownership levels of 2 GHz transmitters increased 13.3% from 4.5 to 5.1 transmitters. That increase has continued. Between 1995 and 1998, the average ownership levels of 2 GHz transmitters increased 13.7% from 5.1 to 5.8 transmitters. Figure 14 documents this increase.

**Figure 14: 2 GHz Transmitter Ownership Increases**

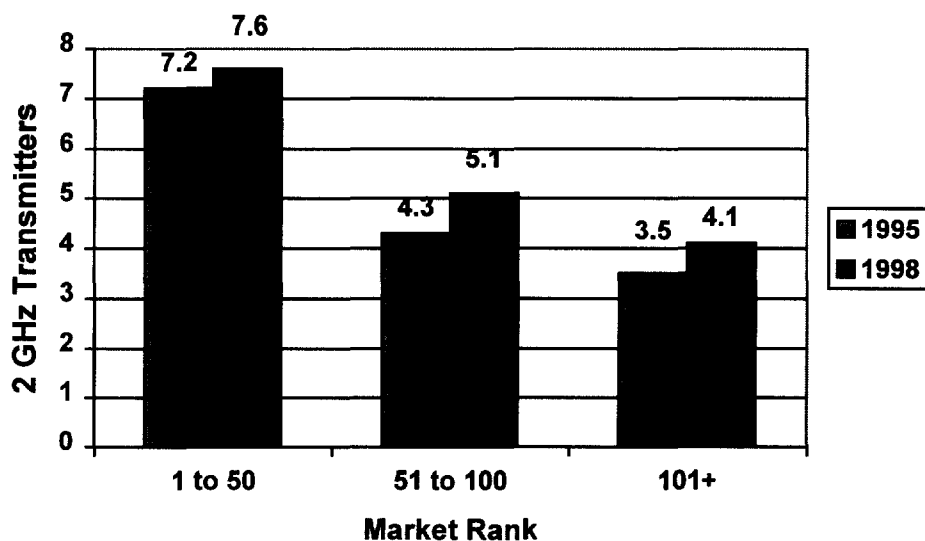


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<sup>4</sup> Analysis of average ownership levels for the 1991 and 1995 surveys was based on averaging the amount of equipment owned for each category only by those respondents reporting ownership of 2 GHz equipment in question 1 of the survey.

Increases in transmitter ownership have occurred in all market rank segments. While increases were smaller in the larger markets, respondents in larger markets still reported owning on average more transmitters than their small market equivalents. Figure 15 shows these transmitter ownership increases by market rank.

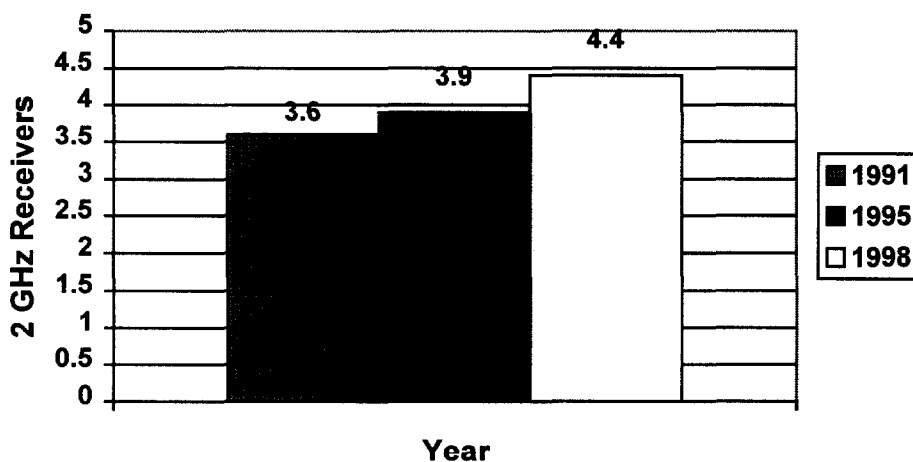
**Figure 15: 2 GHz Transmitter Ownership Increases by Market Rank**



## 2 GHz Receiver Ownership Increases

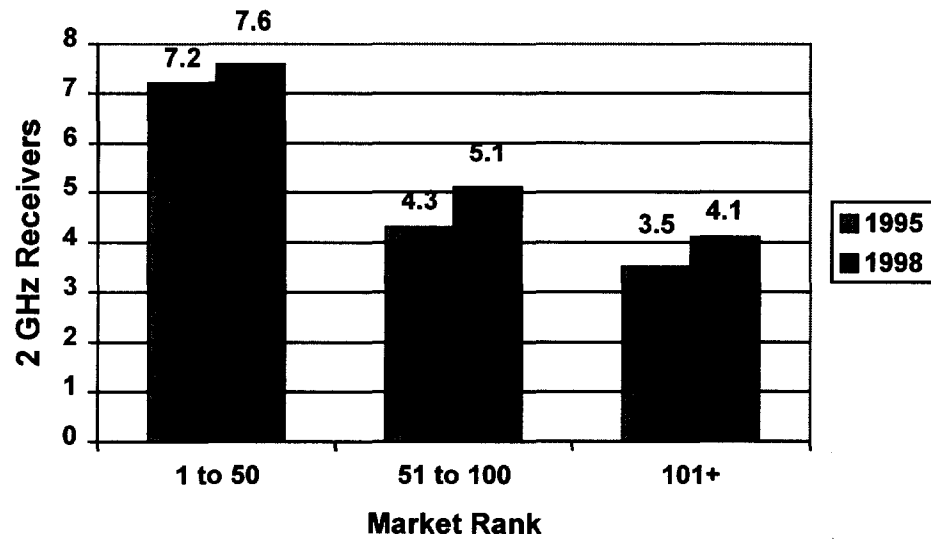
The average number of 2 GHz receivers owned by stations has increased steadily over the past seven years. Between 1991 and 1995, the average ownership levels of 2 GHz receivers increased 8.3% from 3.6 to 3.9 receivers. That increase has actually ramped up. Between the 1995 and 1998, the average ownership levels of 2 GHz receivers increased 12.8% from 3.9 to 4.4 receivers. Figure 16 documents these increases.

**Figure 16: 2 GHz Transmitter Ownership Increases**



As with transmitters, increases in receiver ownership have occurred across all market ranks. While increases were smaller in the larger markets, respondents in larger markets still reported owning on average more receivers than their small market counterparts. Figure 17 shows these receiver ownership increases by market rank.

**Figure 17: 2 GHz Receiver Ownership Increases by Market Rank**



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## Description of Respondents

### Stations' Market Rank

When the market rank of the stations surveyed and those that responded is broken out, the figures are quite similar. It is, however, interesting to note that fewer stations in markets ranked 1 to 25 responded to the survey than would have been expected based on the population. However, more stations in markets ranked greater than 100 responded to the survey than would have been expected based on the population.

**Table 3: Stations' Market Rank**

<b>Market Rank</b>	<b>Respondents</b>	<b>Population</b>
1 to 25	24.8%	26.1%
26 to 50	16.5%	16.1%
51 to 75	13.4%	13.7%
76 to 100	12.1%	11.7%
100+	32.2%	30.2%
<i>Undefined</i>	<i>0.9%</i>	<i>2.2%</i>
(n)	(875)	(1298)

## Stations' Affiliation

All the major networks,<sup>5</sup> except for NBC, responded (by percentage) in a manner consistent with their population. Interestingly, more NBC stations responded than would have been expected. Additionally, less independent and UPN stations responded than would have been expected based on the population.

**Table 4: Stations' Network Affiliation**

<b>Market Rank</b>	<b>Respondents</b>	<b>Population</b>
ABC	16.9%	14.1%
CBS	15.4%	13.8%
FOX	12.1%	11.9%
HSN	0.8%	1.0%
Independent	9.7%	14.4%
NBC	17.8%	14.5%
PBS	14.2%	14.4%
Telemundo	1.1%	1.1%
Univision	1.3%	1.4%
UPN	3.9%	5.2%
WBN	4.0%	4.5%
<i>Undefined</i>	2.6%	3.9%
(n)	(875)	(1298)

## Stations' Commercial Status

The response rates of commercial and non-commercial stations were similar to the population percentages of each of these groups. However, as shown below, slightly more commercial stations than non-commercial stations responded.

**Table 5: Stations' Commercial Status**

<b>Market Rank</b>	<b>Respondents</b>	<b>Population</b>
Commercial	84.5%	84.1%
Non-commercial	15.3%	15.9%
<i>Undefined</i>	0.2%	0.0%
(n)	(875)	(1298)

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<sup>5</sup> Major networks include ABC, CBS, FOX, and NBC

---

## Conclusions

Three quarters of stations reported owning some form of 2 GHz microwave equipment. This figure encompasses all stations, in all markets, affiliating with all of the networks. This figure is far higher among the networks whose affiliates have traditionally broadcast local news (ABC, NBC, and CBS). Over 96% of these respondents reported owning 2 GHz microwave equipment.

These data also show that more stations in markets ranked greater than 50 have 2 GHz equipment, however stations in those markets each own fewer 2 GHz transmitters, receivers, and power amplifiers.

## **Appendix A**

### **The Questionnaire**

## 2 GHz Facilities Questionnaire

Dear Chief Engineer,

The FCC is considering how to best reallocate portions of the 1990 MHz - 2110 MHz (2 GHz) Broadcast Auxiliary Band. In March of 1996 the FCC allocated 35 MHz (1990 MHz - 2025 MHz) to the Mobile Satellite Service. In addition, The Balanced Budget Act of 1997 requires that an additional 15 MHz of spectrum be auctioned from the 2 GHz BAS band. The FCC will soon consider the impact of Congress' actions as well as other issues relating to 2 GHz.

In order to give the Commission as much information as possible, NAB and MSTV need your help in documenting broadcasters' investment in 2 GHz equipment. Please fill out the few questions below and fax your response back to the NAB no later than **Friday, February 27, 1998** at either (202) 775-2980 or (202) 775-4981. All responses will be kept confidential. Only summary information will be reported. **Even if your station does not own any 2 GHz equipment, please mark question #1 "NO" and return this form to NAB.**

Thank you for your help on this important matter. If you have any questions, call Kelly Williams at NAB Science and Technology, (202) 429-5346.

Station Call Letters: \_\_\_\_\_ Phone: \_\_\_\_\_

Name: \_\_\_\_\_

1. Does your station own any 2 GHz microwave equipment? Yes \_\_\_\_\_ No \_\_\_\_\_
2. How many 2 GHz transmitters does your station own? \_\_\_\_\_
  - 2.1 Of these, how many are installed in ENG vehicles? \_\_\_\_\_
  - 2.2 How many are portable units? \_\_\_\_\_
  - 2.3 How many are installed at fixed locations? \_\_\_\_\_
3. How many 2 GHz stand-alone power amplifiers does your station own? \_\_\_\_\_  
(such as those mounted on the mast of an ENG truck)
4. How many 2 GHz receivers does your station own? \_\_\_\_\_
  - 4.1 Of these, how many are installed at fixed locations? \_\_\_\_\_
  - 4.2 How many are portable units? \_\_\_\_\_

**Please return to NAB no later than Friday, February 27, 1998**

**NAB FAX # (202) 775-2980 or (202) 775-4981**